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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/514,421

11/16/2004

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11/28/2008

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EXAMINER

WEDDLE, ALEXANDER MARION

ART UNIT

PAPER NUMBER

1792

MAIL DATE

DELIVERY MODE

11/28/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/514,421	Applicant(s) WAKIZAWA ET AL.	
	Examiner ALEXANDER WEDDLE	Art Unit 1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 August 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments, see pp. 4-6, filed August 6, 2008, with respect to the rejection(s) of claim(s) 1-5 under 35 U.S.C. 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made (see below) .

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claim 5 is rejected under 35 U.S.C. 102(b) as being anticipated by Enomoto et al. (US 5,589,255).

The patentability of a product does not depend on its method of production. *In re Thorpe*, 777 F.2d 695, 697, 227 USPQ 964, 966 (Fed. Cir. 1985) (citing *In re Pilkington*, 411 F.2d 1345, 1348, 162 USPQ 145, 147 (CCPA 1969)). If a product in a product-by-process claim is the same as or obvious from a product in the prior art, the claim is unpatentable even though the prior product is made by a different process. *Id.* citing *In re Marosi*, 710 F.2d 799, 803, 218 USPQ 289, 292-93 (Fed. Cir. 1983); see also *In re Fessmann*, 489 F.2d 742, 744, 180 USPQ 324, 326 (CCPA 1974). Enomoto et al. (US'255) disclose an inner layer board with an electrical insulating layer (Figs. 4a-5f, element 8), a conductor circuit (Figs. 4a-5f, element 9) on the surface, and

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an electrical insulating layer (Figs. 4b-4f and 5b-5f, element 10) comprising a cured resin composition layer covering the conductor circuit (col. 11, lines 8-15). A conductor circuit is formed on the insulating layer (Figs. 4f and 5f, element 13) (col. 11, lines 31-35).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

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consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gaku et al. (US 4,396,679) in view of Enomoto et al. (US 5,589,255), and further in view of Applicant's admitted prior art.

8. Regarding claims 1-4, Gaku et al. (US'679) disclose a method of forming a substrate for printed circuits formed by electroless plating (col. 7, lines 26-29). To ensure proper adhesion between a plastic substrate and a thin metal film formed by electrodeposition, the curable composition film contains a compound capable of coordinating to a metal (e.g., imidazoles or triazines) (col. 3, lines 3-12; col. 5, lines 40-52). The curable composition film, which contains an insulating polymer and a curing agent (col. 6, lines 9-11) and which can be applied by varnish of insulating polymer dissolved in a solvent (col. 6, lines 32-37; col. 7, lines 35-41), is subsequently cured, thereby forming an electrical insulating layer (col. 5, lines 40-44; col. 6, lines 60-61). A metal thin-film layer is formed on the surface of the electrical insulating layer by electroless metal deposition (col. 7, lines 22-26). The metal thin-film layer is heat-treated after it is formed (col. 7, lines 65-68).

US'679 fails to teach forming the metallic thin-film layer of an ethylenediaminetetraacetate-copper ("EDTA-Cu") complex. Enomoto et al. (US'255) teach electroless copper plating using EDTA-Cu complex on the surface of an insulating layer (Table I; col. 9, lines 21-37). It would have been obvious to a person of ordinary skill in the art at the time of invention to modify the invention of US'679 by using EDTA-

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Cu complex for the step of forming a metal thin-film layer on the surface of the electrical insulating layer, because US'255 teaches that such a method is advantageous for electroless plating in producing a multilayer printed circuit board (col. 9, lines 39-42).

US'679 fails to teach forming a multilayer circuit structure. US'255 teaches enhancing pattern adhesion using imidazole to form a multilayer circuit structure (col. 6, lines 18-19; col. 10, lines 25-30; col. 9, lines 39-42). It would have been obvious to a person of ordinary skill in the art at the time of invention to modify the process of US'679 to form a multilayer circuit structure, because US'679 suggests that such process will create sufficient adhesion between the insulating layer and the pattern layer to create such a structure (Example 3, col. 10, lines 25-57).

US'679 in view of US'255 fails to teach bringing the compound that has a structure capable of coordinating to a metal into contact with the surface of the curable composition film after forming a curable composition film and before curing the curable composition film. It would have been obvious to a person of ordinary skill in the art at the time of invention to modify the process of US'679 in view of US'255 by splitting the step of forming an outermost layer into a step of adding a curable composition and a step of adding the compound that has a structure capable of coordinating to a metal before curing the resulting composite film, because such person would have recognized the benefit of adding the compositions sequentially to increase surface adhesion as suggested by US'255 (col. 2, lines 17-22).

US'679 in view of US'255 fails to teach hydrophilicating the surface of the resulting electrical insulating layer, such as in a step of bringing the electrical insulating

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layer into contact with a mixture solution of potassium permanganate and alkali hydroxide. Applicant's admitted prior art teaches that the electrical insulating layer is dipped in an oxidizing solution that comprises a mixture of potassium permanganate and alkali hydroxide, such that the surface of the epoxy resin is roughened ("hydrophilicated") to improve wetting (Fig. 5(b) – and 5(c); pars. 0009-0013). It would have been obvious to a person of ordinary skill in the art at the time of invention to modify the process of US'679 in view of US'255 to carry out a step of hydrophilicating the surface of the resulting electrical insulating layer using a mixture of potassium permanganate and sodium hydroxide, because Applicant's admitted prior art teaches that such a step is a common step in the art to improve adhesion (pars. 0006 and 0013).

The combined references fail to teach a mixture of hydrophilicating solution comprising from 65 g/liter to 150 g/liter of potassium permanganate and from 0.75 N to 1.5 N of an alkali hydroxide. The concentration of the components and the ratio of components of the solution are result-effective variables, because they directly affect the amount of roughening or hydrophilicating which will occur on the insulating layer. It would have been obvious to a person of ordinary skill in the art at the time of invention to modify the process of the combined references by using a hydrophilicating solution of optimal concentrations as a result of routine optimization.

Claims 1-4 are *prima facie* obvious absent evidence to the contrary.

Double Patenting

9. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the

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unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

10. Claims 1-4 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-3, 11, 15, 18, 22, 23 and 24 of copending Application No. 10/487,997. Although the conflicting claims are not identical, they are not patentably distinct from each other because of the following

Regarding Claims 1-2, App. No. '997 Claim 1 claims a method of forming a multilayer circuit board comprising the steps of forming a curable composition "film" ("layer") that contains an insulating polymer ("resin") and a curing agent on the outermost layer ("surface") of an inner layer board; bringing a compound having a structure capable of coordinating to a metal into contact with the surface of the curable composition film; curing the curable composition film to form an electrical insulating layer; forming a metal thin-film layer on the surface of said electrical insulating layer; and forming a conductor circuit, utilizing the metal thin-film layer. Claims 18 and 22 claim a step of oxidizing the surface of the electrical insulating layer after curing the

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resin to form the electrical insulating layer. Claims 11 and 22 claim electroless plating on the electrical insulating layer. Examiner takes Official Notice that it is well-known in the art to use a mixture of potassium permanganate and alkali hydroxide to roughen (i.e., hydrophilicate) the surface of the electrical insulating layer by oxidation.

Furthermore, Examiner takes Official Notice that EDTA-Cu is well-known in the art as a complex for electroless plating to printed circuits. It would have been obvious to a person of ordinary skill in the art at the time of invention to both hydrophilicate the surface in order to increase adhesion and to use EDTA-Cu as a commonly used complex to create circuits.

Regarding Claim 3, Claim 3 of App. No. '997 claims the method wherein said curable resin composition is formed by coating a solution containing an insulating resin (i.e. "applying a varnish").

Regarding Claim 4, Claims 15 and 24 of App. No. '997 claim a step of heat treating the metallic thin film layer after the metal thin-film layer is formed.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Conclusion

11. No Claim is allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ALEXANDER WEDDLE whose telephone number is (571) 270-5346. The examiner can normally be reached on Monday-Thursday, 7:30 AM - 5:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Kornakov can be reached on (571)272-1303. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/A. W./
Examiner, Art Unit 1792

/Michael Kornakov/
Supervisory Patent Examiner, Art Unit 1792